CLAIMS

1   1.   An optical communication system to extend a range or data communications

2   comprising:

3   a mobile communication device;

4   an output buffer;

5   an optical transmitter associated with the device;

6   wherein the transmitter transmits optical data comprising a message bit that is

7   represented by a plurality of optical transmission pulses for each bit in the output buffer.

1   2.   The optical communication system of claim 1, wherein the plurality of optical

2   transmission pulses are identical for each bit in the output buffer.

1   3.   An apparatus to extend a range of infrared data communication, the apparatus

2   comprising:

3   a device for receiving user inputs; and

4   an infrared transmitter associated with the device, wherein the transmitter transmits

5   infrared data as signals wherein a bit of infrared data is represented by a plurality of identical

6   pulses.

1   4.   The apparatus as defined in claim 3, wherein the device for receiving user inputs

2   comprises pre-existing unmodified hardware devices selected from the group of pre-existing

3   unmodified hardware devices of: a personal data assistant, a 3Com Palm Pilot compatible

4   device, and a Windows CE based device.

5.   The apparatus as defined in claim 3, further comprising a display for displaying a visual

representation of incoming signal strength.

6.   The apparatus as defined in claim 3, wherein the incoming signal strength is measured

through the use of an incoming synchronization header.

7.   The apparatus as defined in claim 3, wherein the incoming signal strength is measured

through a summation of received pulses.

1   8.   The apparatus as defined in claim 3, wherein the incoming signal strength is measured

2   through graduation of the pulse width and therefore the energy of a synchronizing signal.

1   9.   The method as defined in claim 3, wherein the apparatus further comprises an infrared

2   receiver for receiving incoming signals from a stationary object wherein the infrared receiver

3   and infrared transmitter comprise a transceiver for asymmetric communication for slow

4   transmission and fast reception of information.

1   10.   An apparatus for receiving and transmitting infrared data communication, the

2   apparatus comprising:

3   a stationary object for reception of the infrared data communication; and

4   a plurality of infrared receivers spatially arranged around the apparatus.

1   11.   The apparatus as defined in claim 10, wherein the plurality of infrared receivers

2   comprise electro-optical receivers.

1   12.   The apparatus as defined in claim 11, wherein the stationary object comprises an

2   access point for intercommunication of infrared data.

1   13.   The apparatus as defined in claim 11, further comprising a signal processor for

2   combining and reconstructing a sequence of signals into data bits and for converting data to

3   be transmitted into signals applied to high power infrared transmitters.

1   14.   The apparatus as defined in claim 11, further comprising a plurality of high power

2   infrared transmitters for transmitting infrared signals to a user device wherein each infrared

3   transmitter is associated with exactly one of the plurality of infrared receivers thereby each pair

4   so arranged forming an infrared transceiver wherein a plurality of the transceivers provides

5   multiple spatially multiplexed communication channels.

1   15.   The apparatus as defined in claim 14, wherein the infrared data communication

2   comprises information bits wherein each information bit is represented by a stream of

3   identical data pulses.

1   16.   The apparatus as defined in claim 14, further comprising a communication channel for

2   digitally linking a signal processor with a translation device.

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1   17.   The apparatus as defined in claim 16, wherein the communication channel comprises

2   a communication channel selected from the group of communication channels of: an ac

3   modem, an RF modem, an analog phone modem, an asynchronous wire and an ethernet

4   controller.

1   18.   The apparatus as defined in claim 17, wherein the translation device comprises a

2   transcoder for translation of protocols, formats, commands and control logic from one

3   computing device or application to another.

1   19.   The apparatus as defined in claim 18, wherein the computing device or application

2   comprises computing devices or applications selected from the group of computing devices

3   or applications of: a desktop computer, an access point, the Internet, a computer network, a

4   printer, a cellular phone, a point of sale terminal, a laptop computer and a database.

1   20.   A method for extending a range of infrared data communication between a user device

2   and another object, the method on the user device comprising the steps of:

3   receiving user inputs on a user device; and

4   transmitting infrared data as signals from an infrared transmitter associated with the

5   device, wherein a bit of infrared data is represented by a plurality of identical pulses.

1   21.   The method as defined in claim 20, wherein the step of receiving user inputs includes

2   receiving user inputs on a user device comprising user pre-existing unmodified hardware

3   devices selected from the group of user pre-existing unmodified hardware devices of: a

4   personal data assistant, a 3Com Palm Pilot compatible device, and a Windows CE based

5   device.

22.   The method as defined in claim 20, further comprising the programming instruction of:

         displaying a visual representation of incoming signal strength on a display associated

with the user device.

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1   23.   A computer readable medium containing programming instructions for extending a

2   range of infrared data communication between a user device and another object, the method

3   on the user device, the computer readable medium comprising the programming instructions

4   of:

5   receiving user inputs on the user device; and

6   transmitting infrared data as signals from an infrared transmitter associated with the

7   device, wherein a bit of infrared data is represented by a plurality of identical pulses.

1   24.   The computer readable medium as defined in claim 23, wherein the programming

2   instruction of receiving user inputs includes receiving user inputs on a user device comprising

3   user pre-existing unmodified hardware devices selected from the group of user pre-existing

4   unmodified hardware devices of: a personal data assistant, a 3Com Palm Pilot compatible

5   device, and a Windows CE based device.

1   25.   The computer readable medium as defined in claim 23, further comprising the

2   programming instruction of:

3   displaying a visual representation of incoming signal strength on a display associated

4   with the user device.